The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A method for estimating DC motor coil temperature in a motor driving system in which an output of an inverter is supplied to a DC motor, comprising: ~~steps of;~~

calculating a resistance of ~~the~~ a coil of the DC motor by using a motor current and a motor voltage, and

estimating a coil temperature by using resistance-temperature characteristics of the coil of the DC motor.

2. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in claim 1, ~~comprising the step of~~ wherein

the calculating of the [[a]] resistance of the coil of the [[a]] DC motor includes ~~by~~ using a duty difference and a current difference by using a plurality of ~~duties, instead the calculating step~~ duty ratios.

3. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in claim 1, further comprising ~~or claim 2, wherein~~

employing a ~~the motor driving system employs~~ fixed coordinate system and applying ~~applies~~ a voltage with an electrical angle determined to be a constant angle.

4. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in claim 2, further comprising ~~wherein~~

maintaining ~~the motor driving system maintains~~ a constant duty for equal to or greater than at least 0.5 seconds.

5. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in ~~one of~~ claim 1 ~~to claim 4~~, further comprising ~~wherein~~

detecting ~~the system detects~~ a motor current by using a shunt resistor, and

the calculating ~~step calculates~~ of the resistance of the coil of the DC motor is performed by calculating a coil resistance at a carrier frequency lower than that for driving the DC motor ~~driving~~.

6. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in ~~one of~~ claim 1, further comprising ~~to claim 5, wherein~~

providing the DC motor within ~~is provided in~~ an interior of a casing of a compressor [[,]] for driving the compressor.

7. (Currently Amended) A DC motor control method using the method as set forth in claim 1 for estimating the DC motor coil temperature and comprising ~~the steps of;~~

~~estimating a coil temperature by using one of the methods of claim 1 to claim 6, and~~

setting a DC motor temperature to be a predetermined temperature based upon the ~~estimated~~ coil temperature that was estimated.

8. (Currently Amended) A DC motor control method using the method as set forth in claim 1 for estimating the DC motor coil temperature and comprising ~~the steps of;~~

~~estimating a coil temperature by using one of the methods of claim 1 to claim 6, and~~

setting a time interval ~~till~~ until starting of [[a]] the DC motor based upon the ~~estimated~~ coil temperature that was estimated.

9. (Currently Amended) A DC motor control method using the method as set forth in claim 1 for estimating the DC motor coil temperature and comprising ~~the steps of;~~

~~estimating a coil temperature by using one of the methods of claim 1 to claim 6, and~~

setting a driving and controlling method for [[a]] the DC motor based upon the ~~estimated~~ coil temperature that was estimated.

10. (Currently Amended) A device for estimating DC motor coil temperature comprising: [[;]]

~~motor driving system in which an output of~~ an inverter that supplies an output ~~is supplied to~~ a DC motor; and ~~, wherein the system comprises~~

a coil temperature estimating section ~~means which comprise~~ comprising

a resistance value calculating section configured to calculate ~~means for calculating~~ a resistance of ~~the~~ a coil of the DC motor by using a motor current and a motor voltage, and

a temperature output section configured to output ~~means for estimating~~ an estimated coil temperature by using a ~~the~~ resistance-temperature characteristics of the coil of the DC motor.

11. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in claim 10, wherein

the ~~coil temperature estimating means~~ resistance value calculating section is further configured to calculate [[a]] the resistance of the coil of [[a]] the DC motor by using a duty difference and a current difference by using a plurality of ~~duties~~ duty ratios.

12. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in claim 10 ~~or claim 11~~, wherein

the coil temperature estimating ~~means~~ section is further configured to employ a fixed coordinate system and apply a voltage with an electrical angle determined to be a constant angle.

13. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in claim 11, wherein

the coil temperature estimating ~~means~~ section further includes a constant duty maintaining section that is configured to maintain a constant duty for equal to or greater than at least 0.5 seconds.

14. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in ~~one of~~ claim 10 ~~to claim 13~~, wherein

the coil temperature estimating ~~means~~ section is further configured to detect a motor current by using a shunt resistor, and calculate a coil resistance at a carrier frequency lower than that for driving the DC motor ~~driving~~.

15. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in ~~one of~~ claim 10 ~~to claim 14~~, wherein

the DC motor is provided within an interior of a casing of a compressor [[,]] for driving the compressor.

16. (Currently Amended) A DC motor control device using the device as set forth in claim 10 for estimating the DC motor coil temperature and comprising [[;]]

~~means for estimating a coil temperature by using one of the devices of claim 10 to claim 15, and~~

a control section configured to set ~~means for setting~~ a DC motor temperature to be a predetermined temperature based upon the estimated coil temperature.

17. (Currently Amended) A DC motor control device using the device as set forth in claim 10 for estimating the DC motor coil temperature and comprising [[;]]

~~means for estimating a coil temperature by using one of the devices of claim 10 to claim 15, and~~

a control section configured to set ~~means for setting~~ a time interval ~~till~~ until starting of [[a]] the DC motor based upon the estimated coil temperature.

18. (Currently Amended) A DC motor control device using the device as set forth in claim 10 for estimating the DC motor coil temperature and comprising [[;]]

~~means for estimating a coil temperature by using one of the devices of claim 10 to claim 15, and~~

a control section configured to set a ~~means for setting~~ driving and controlling method for [[a]] the DC motor based upon the estimated coil temperature.

19. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in ~~one of~~ claim 1 ~~to claim 6~~, wherein

the calculating ~~step calculates a resistance of a coil by~~ of the resistance of the coil of the DC motor includes compensating for a voltage drop due to transistors and diodes included in the ~~an~~ inverter.

20. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in claim 1, further comprising ~~the step of~~

carrying out compensation based upon a resistance value of power wirings when [[a]] the coil temperature is estimated by using a value obtained through calibration.

21. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in claim 19, further comprising ~~the step of~~

detecting a rotor position of [[a]] the DC motor, calculating an inductance from ~~the detected~~ rotor position that was detected, and compensating [[a]] the coil temperature calculated from [[a]] the resistance of [[a]] the coil, in correspondence with the ~~calculated~~ inductance that was calculated.

22. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in ~~one of~~ claim 1 ~~to claim 6~~, wherein

the ~~detection of the~~ motor current is detected ~~carried out~~ at a central timing of an ON-time or an OFF-time.

23. (Currently Amended) The [[A]] method for estimating DC motor coil temperature as set forth in ~~one of~~ claim 1 ~~to claim 6~~, wherein

the ~~detection of the~~ motor current is detected ~~carried out~~ under a condition that a predetermined voltage is output by using a PAM circuitry.

24. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in ~~one of~~ claim 10 ~~to claim 15~~, wherein

the coil temperature estimating ~~means~~ section is further configured to calculate [[a]] the resistance of [[a]] the coil by compensating voltage drops due to transistors and diodes included in ~~an~~ the inverter, and estimate [[a]] the temperature of the coil from the resistance of the coil.

25. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in claim 10, wherein

the coil temperature estimating ~~means~~ section is further configured to carry out compensation based upon a resistance value of power wirings when [[a]] the estimated coil temperature is estimated by using a value obtained through calibration.

26. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in claim 10, wherein

the coil temperature estimating ~~means~~ section is further configured to detect a rotor position of [[a]] the DC motor, calculate an inductance from the ~~detected~~ rotor position that was detected, and compensate [[a]] the coil temperature calculated from [[a]] the resistance of [[a]] the coil, in correspondence with the ~~calculated~~ inductance that was calculated.

27. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in one of claim 10 to claim 15, wherein

the coil temperature estimating ~~means~~ section is further configured to detect the motor current at a central timing of an ON-time or an OFF-time.

28. (Currently Amended) The [[A]] device for estimating DC motor coil temperature as set forth in one of claim 10 to claim 15, wherein

the coil temperature estimating ~~means~~ section is further configured to detect the motor current under a condition that a predetermined voltage is output by using a PAM circuitry.